L 7971-66   EWT(m)/ETC/EWG(m)/T   DS

ACC NR: AP5025082   SOURCE CODE: UR/0364/65/001/010/1235/1244

AUTHOR: Gurevich, I. G.; Bagotskiy, V. S.

ORG: Heat and Mass Transfer Institute AN BSSR (Institut teplo- i massobmena AN BSSR)

TITLE: Liquid porous electrodes in unsteady state operation. I. The galvanostatic case with diffusion feed of the reagent

SOURCE: Elektrokhimiya, v. 1, no. 10, 1965, 1235-1244

TOPIC TAGS: electrode, electrolytic cell, cathode polarization

ABSTRACT: The article treats the subject of transitional processes in porous electrodes. A porous electrode is place in an electrolytic chamber which contains the electrolyte mixture, along with the reagents and the reaction products. In examining the transport stage of the electrolytic process there are considered only the flows of electroneutral substances (reagents and products); it is assumed that their transfer in the electrode-electrolytic chamber system consists only in molecular diffusion. It is further assumed that the concentrations of the ionic com-

Card 1/2

UDC: 541.13

L 7971-66
ACC NR: AP5025082   3

ponents of the working mixture are considerably larger than the concentrations of
the electroneutral reagents and products. The article gives an analytical solution
for the problem of a transition process taking place in a liquid porous electrode
of finite thickness, with diffusion feed of the reagent. A solution is given to the
problem for galvanostatic operating conditions, taking into account chemical
(activation) and concentration boundaries, as well as ohmic losses with a small
degree of polarization. Expressions are given for calculating a number of cha-
racteristics of the transition process, among them the measured degree of
polarization. "The authors take the opportunity to thank L. A. Pott for discussing
the work." Orig. art. has: 28 formulas and 2 figures $\gamma\gamma$ $\zeta\zeta$

SUB CODE: GC/ SUBM DATE: 26Apr65/ ORIG REF: 005/ OTH REF: 005

Card 2/2

GUREVICH, I.G.; BAGOTSKIY, V.S.

Quasi-stationary relation for capillary-porous elements of chemical reactors. Inzh.-fiz. zhur. 10 no.1:55-59   Ja '66.

(MIRA 19:2)

1. Institut teplo- i massoobmena AN BSSR, Minsk. Submitted August 8, 1965.

GUREVICH, I.I.

MEDVEDEV, N.N., kandidat biologicheskikh nauk; GUREVICH, I.I. [translator];
MEL'NIKOVA, Ye.I., tekhnicheskiy redaktor.

[Problems in aviation medicine] Voprosy aviatsionnoi meditsiny; Moskva,
Izd-vo inostrannoi lit-ry, 1954. 283 p.   (MLRA 8:2)
       (Aviation medicine)

GUREVICH, I.I.

ARMSTRONG, H.G.; GUREVICH, I.I. [translator] KROTKOV, F.G., professor,
redaktor; TATARINOV, L.P., redaktor; BELEVA, M.A., tekhnicheskiy
redaktor

[Aviation medicine. Translation from the English] Aviatsionnaia
meditsina. Perevod s angliiskogo I.I.Gurevicha. Pod red. i s predisl.
F.G.Krotkova. Moskva, Izd-vo inostrannoi lit-ry, 1954. 521 p.
    (Aviation medicine)   (MIRA 8:4)

GUREVICH, I.I. [translator];|IVANOV, V.I., doktor med.nauk, red.;
    KRUGLIKOV, F.F., red.; IOVLEVA, N.A., tekhn.red.

[A man under high-altitude and space flying conditions; collected
translations from foreign periodicals] Chelovek v usloviiakh
vysotnogo i kosmicheskoge poleta; sbornik perevodov iz inostran-
noi periodicheskoi literatury. Pod red. V.I.Ivanova. Moskva,
Izd-vo inostr.lit-ry, 1960. 462 p.   (MIRA 13:5)
    (AVIATION MEDICINE)   (SPACE MEDICINE)

GUREVICH, I.I.[translator]; YAZDOVSKIY, V.I., prof., red.; POPOV,
I.G., red.; BALDINA, N.F., tekhn. red.

[Problems in space medicine; a collection of articles by
foreign authors]Voprosy kosmicheskoi meditsiny; sbornik sta-
tei zarubezhnykh avtorov. Moskva, Medgiz, 1962. 323 p.
(MIRA 15:9)

(SPACE MEDICINE)

GUREVICH, I. I.

"Character of the Absorption of Slow Neutrons in Dysprosium and Cadmium," by I.I. Gurevich and M.G.Meshcheryakov, Zhur. Eksper. i Teor. Fiz., Vol 7, p.1274, 1937

390. Energy Levels of a Heavy Nucleus. I. Gurevitsch. *Phys. Zeits. d. Soujetunion*, 13. 4. pp. 489–490, 1937. *In English.*—In a recent paper, Landau [see Abstract 2674 (1937)] has given an approximate formula for the number of levels of a liquid model of an atomic nucleus with the excitation energy between 0 and ϵ, viz. $n(\epsilon) = e^{\sqrt{\epsilon a}}$, where a is a constant in the expression of the free energy $F = -\frac{1}{4}a\,\Theta^2$, $\Theta = AT$. The formula of Landau is only logarithmically true, and the author now puts forward a better solution, the ratio of his approximate expression (and not merely of its logarithm) to the exact value tending to 1 with $\epsilon \to \infty$ [it becomes practically 1 as soon as $n(\epsilon) \gg 1$], viz., $n(\epsilon) = \sqrt{\epsilon a}/2\pi\epsilon a^{\frac{1}{4}}$. These formulae lead to the following result for the distance between two neighbouring resonance levels: $D = 2\pi K^{3/2}\,\Theta^{5/4}\,e^{1/2}\sqrt{\epsilon}/h^2$, where K is the moment of inertia of the nucleus (supposed to be spherical), σ is the entropy, and h is Planck's constant divided by 2π. Landau's result was $D = \sqrt{2\pi}\,K^{3/2}\,\Theta^{5/4}\sqrt{\epsilon}/h^2$. — H. H. Ho.

Distribution of nuclear levels. I. I. Gurevich and G. R. Rik. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Sér. phys.* 1938, No. 5-6, 771-0(in English, 780); cf. *C. A. 32*, 2121⁸.—The distribution of nuclear levels for light and heavy nuclei is discussed. The excitation curve of He³ for the (α, n)-process for the energies of α-particles ≤ 8.8 m. e. v. was studied by means of a proportional counter with solid Li as a detector for slow neutrons. The resonance max. at α-particle energies 3.7, 7.7 and 8.6 m. e. v. were found. Two of them lie higher than the potential barrier of He³; this can be explained in terms of Bohr's views on the formation of an intermediate "compd." nucleus. The intervals between the levels of the excited "compd." C¹¹ (the energies of the levels are 13.1, 15.8 and 16.5 m. e. v.) are much greater than those calcd. from the static theory of the nucleus. An equation giving the distribution of the intervals between the levels around their mean value was deduced. A method is developed for detn. of the intervals between the levels of the resonance capture of slow neutrons from the distribution of the capture cross sections for C neutrons for the given group of elements. The chaotic character of the distribution of the intervals between the nuclear levels of the rare earth elements around their

Iz.Ak.Nauk SSSR, Ser Fiz.

mean value was verified. The mean intervals between the levels of the resonance capture of slow neutrons were evaluated for groups of elements with a mean at. wt. 110, 100 and 105, and found to be ≈15 m. e. v., 3 m. e. v. and 8-10 m. e. v., resp. A max. was established for the d. of nuclear levels for the capture of slow neutrons in the region of the rare earth elements.   W. R. Henn

Disintegration of atomic nuclei by cosmic rays. I. I.
Gurevich, A. P. Zhdanov and A. N. Filippov. *J. Expl.
Theoret. Phys.* (U. S. S. R.) 8, 621-38 (1938). With
photographic plates with special, thick Ilfordemulsions (50 μ)
ref. Zhdanov, C. J. 20, 717 9) contg. either Be or Li
salts as the substance to be disintegrated, the disintegra-
tion of at. nuclei by cosmic rays was studied. The plates
were kept for 10-30 days completely protected from light,
neutrons, and α-, β- and γ-rays, and then developed.
Over 10,000 disintegrations ejecting 1-5 particles each were
observed. Proton showers covering a small angular
range were observed. Processes accompanying proton
ejection gave particles with a mass *intermediate* between
those of electron and proton. The energy requirement is
of the order of tens of millions of electron volts.
F. H. Rathmann

GUREVICH, I. I.

   "A Method of Defining the Energy Spectrum of Fast Neutrons," Zhur. Eksper. i
Teoret. Fiz., Vol 8, p. 791, 1938

The absorption of slow neutrons in dysprosium and cadmium. I. I. Gurevich and M. G. Meshcheryakov. *Phvuk. Z. Snojetunion* 13, 151 no. 1938 (in English). Approx. 97.8% of the activity of neutron-bombarded Dy is due to Ce-electrons and the remainder to faster ones. This, together with the great activation capacity of Dy, makes it a convenient indicator for exprs. with thermal neutrons (activity Dy = δ_{c} 91%; activity Mo = 2%,&c.). Neutrons passing through Cd and activating Dy have an energy of approx. 0.6 e.v. and an absorption coeff. in H of 7.5 sq. cm g. The principal absorption in Dy is due to Dy[161] and the true effective cross section of Dy for the absorption of thermal neutrons is 2.5 × 10^{-21} sq. cm. Absorption coeffs. of c-neutrons and Dy resonance neutrons in Cd are found to be 16.8 and 0.01 sq. cm g., resp. The Cd resonance band is at 0.16 e.v. and its width is 0.18 e.v.   F. H. Dunkelberger.

GUREVICH, I. I.; FILIPPOV, A. N.   and   ZHDANOV, A. P.

"The Disintegration of Atomic Nuclei by Cosmic Rays," Zhur. Fiz, USSR, No.1,
p 51-65, 1939 (in English). See C.A. 33, 4867[7].

CA

Zhun. Eksper. i Teor. Fiz.

Properties of the energy spectrum of heavy nuclei. I. I. Gurevich. J. Exptl. Theoret. Phys. (U. S. S. R.) 9, 1283(1939); cf. C. A. 32, 2431.—From a detailed consideration of the relation between the distribution of the cross section for capture of hot neutrons and the av. distance between resonance levels, G. finds an obvious min. in the distance between the energy levels in the rare earths, and explains this phenomenon on the basis of a phase transition of the nucleus, a change of state of the nuclear material analogous to that in liquid He.
F. H. Rathmann

The metastable levels of the gadolinium nucleus.
D. G. Alkhazov, I. Gurevich, I. Kurchatov and V. N.
Rukavishnikov. Compt. rend. acad. sci. U. R. S. S.
25, 111-13(1939)(in English).—Gd was irradiated by slow
neutrons and the intense soft radiation measured by ab-
sorption with various thicknesses of cellophane, Al, Cu
and Sn.   The radiation is shown to be electronic, being of
the order of 100 e. kv. (with an Al absorber 4 5 mg. per
sq. cm. thick).   The authors conclude that the Gd iso-
tope, which absorbs slow neutrons, and shows no artificial
radioactivity, is characterized by a metastable state
leading to processes of internal conversion.   F. Gonet

C 7

3

Phase transitions in nuclear matter. I. I. Gurevich, *Bull. acad. sci. U. R. S. S., Ser. phys.* 4, 330-1 (in English, 331) (1940).—Studies of neutron-capture cross sections indicate that the distances between the excited nuclear levels are exceptionally small in the region of rare earths. Using Landau's relation $D \sim e^{-aE.E.}$ for the dependence of level sepn. D on the nuclear entropy S indicates that in this region of at. wt. S must have a sharp max. However, if the temp. of the nucleus is proportional to some power of excitation energy (Landau, Weisskopf, Bethe), the value of D should be a monotonic function of at. wt. A for given excitation energy E. This fact suggests that nuclei may be in different thermodynamic states at different temps., i. e., that there exist phase transmutations of nuclear matter.   Roksalana Gamow

Iz. Ak. Nauk SSSR,
ser. Fiz.

ASM-SLA   METALLURGICAL LITERATURE CLASSIFICATION

GUREVICH, I. I.

USSR/Nuclear Physics - Varitrons   Jul 49
    Nuclear Physics - Cosmic Rays

"Observation of Varitrons of Various Masses in Photographic Plates," A. I. Alikhanyan,
D. M. Samoylovich, I. I. Gurevich, Kh. P. Babayan, R. I. Gerasimova, Inst of Phys
Problems, Acad Sci USSR, Phys,Inst, Acad Sci Armenian SSR, 3 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 7

Introduces results of studying separate traces of charged cosmic particles. Traces
used were at least 200 microns long. Ends of traces lay in the emulsion film. These
tests again confirmed existence of varitrons with masses up to 10,000 times the mass
of an electron. Submitted 9 Apr 49.

PA 51/49T56

GUREVICH, I. I.

USSR/Nuclear Physics - Varitrons   Jul 49
    Nuclear Physics - Cosmic Rays

"Disintegration of Heavy Varitrons," A. I. Alikhanyan, D. M. Samoylovich, I. I.
Gurevich, Kh. P. Babayan, Phys Inst, Acad Sci Armenian SSR, Inst of Phys Problems,
Acad Sci USSR, 4 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 7

Results of investigations of traces caused by cosmic particles in photographic emulsions.
Established that at least six groups of trajectories were caused by varitrons with
masses 180-200, 320-350, 650-700, 950-1,000, 3,500-4,000 and 8,000-10,000 times the
electron mass. Submitted 9 Apr 49.

PA 51/49T55

GUREVICH, I. I., POMERANCHUK, I. Ya., SHIVAK, F. Ye., YEROFEYEV, V. G.,
and STOLYAROV, G. A.

"Theory of Resonance Abosorption in Heterogeneous Systems".

Report appearing in 1st Volume of "Session of the Academy of Sciences USSR
on the Peaceful use of Atomic Energy, 1-5 July 1955", Publishing House of Academy
of Sciences USSR, 1955.

SO: Sum 728, 28 Nov 1955.

Gurevich, L.L.

/ 2143

EXCITED STATES OF NUCLEONS. L. L. Gurevich.
Doklady Akad. Nauk S.S.S.R. 105, 69-72(1955) Nov. 1.
(in Russian)

The work is concerned with the further development
of the theory of hyperon formation from the study of states
of excitation of nucleons. Only the metastable states of the
nucleon with the mean life of $\leq 10^{-11}$ sec are discussed.
(R.V.J.)

GUREVICH, I.I.

8

2849

OBSERVATION OF FORMATION AND DECAY OF UN-
STABLE PARTICLES IN EMULSION CHAMBERS. V. V.
Alpers, R. I. Gerasimova, I. I. Gurevich, A. P. Mishakova
and L. B. Surkova. Doklady Akad. Nauk S.S.R. 105, 236-
9(1955) Nov. 11. (In Russian)

Track tracings of unstable particles were recorded on
emulsion film. Gases of associated stars were studied to
find K^- mesons associated with Λ^0 and other particles.
Investigations of 4-prong stars to find τ mesons and 2-
prong stars to find hyperons were made. 398 tracks of τ
mesons were measured, 214 of which were formed inside
of the emulsion chambers. An area of emulsion of 20cm^3
was analyzed. (R.V.J.)

PH

④

Translation D 419421 - p.19

GUREVICH, I.I.

publ.: November 21st 1955

rec.: January 30th 1956

reviewed: February 3rd 1956

transl.i.E.: February 7th 1956

605

Dokl. Akad. Nauk, 105, 451-453 (1955)

On the Spin and Parity of the τ-Meson. (Russian)

by I.I. GUREVIC, A.P. MISAKOVA

Translation D #18421 p.21

I. I. Gurević, etc,

According to the author's opinion the statement made by
E.AMALDI, E.FABRI et al. (Suppl.Nuovo Cimento, 12, 419 (1954))
to the effect that the T-meson has the spin 0 or 3 and anti-
symmetry, is incomplete because a T-act of decay may belong
to group b or group c. With the acts of decay hitherto ob-
served it is true for the charge signs (in brackets) of the
pions which are produced on this occasion, the complete traces
of which are present in the emulsion, that: 15 (++-) +
+ 3(++)+ 15 (+-) + 1 (-). 31 cases belong to the domains
a, b, or c; 3 cases belong to two different domains (b and c)
because of the similarity of the energies of the negative and

I I. G....., ...,

of the positive pions. The following distribution of all
τ-mesons over the FABRI domains is the most probable
... n(a) = ..., n(b) = 12, n(c) = 11. From PEARSON'S prob-
abilities, according to which a pion which has the opposite
charge with respect to the τ-meson belongs to the domains
a, b, and c, there follow with the greatest probability the
cases (0-) and (3-). The spin of the τ-meson is not equal
to 1. The more sensible analysis of the 31 pure cases alone
leads to the following distribution: $n_a = 11$, $n_b = 10$,
$n_c = 10$; in that case the most probable spin value of the
τ-meson is S = 0, and it has asymmetry. With even more exact
conditions prevaling, $S_\tau = 1$ and $S_\tau = 2$ are strictly excluded

(OVER)

and the cases (3-) and/or (0-) have PEARSON's probabilities

0.28 and 0.80 respectively. Thus, the T-meson is most probably,

just like the pion, a pseudo-scalar particle. In spite of the

similarity of its mass $m_T = (965.5 \pm 0.7)\, m_e$ to that of the

θ-meson $m_\theta = (965 \pm 10)m_e$, the θ- and the T-meson are different

particles, because, according to I.S. ŠAPIRO (Žurn. eksp.i.teor.

fis, 27, 257, (1954)) they could otherwise not have the spin 0.

If the T-meson is really pseudoscalar, it has the following

alternative decay scheme: $T^+ \to \pi^+ + \pi^+ + \pi^-$ and $T^+ \to \mu^+ + \nu$.

Because of the analogy with the newly discovered decay of

K-mesons ($K_{\mu_2} \to \mu + \nu$) the exact determination of the mass of

the K_{μ_2}-meson is of utmost importance.

GUREVICH, I. I.

Observation of the genesis and decomposition of un-
stable particles in an emulsion chamber. Y. Y. Agasi
M. E. Gurevich, and N. V. Burkova. Soviet Phys. "Doklady"
9-611-613 (1963)(English translation). — See C.A. 51, 7189h.

R. M. F.

ALPERS, V.V.; GUREVICH, I.I.; SURKOVA, L.V.

Emulsion chamber observations on unstable particle production and
decay. Dokl.AN SSSR no.3:421-422 My '56.   (MLRA 9:8)

1. Predstavleno akademikom L.A. Artsimovichem.
        (Cosmic rays) (Ionization chambers) (Photography,
        (Photography, Particle track)

GUREVICH, I.I.

3990

GUREVICH, I.I.

Category : USSR/Nuclear Physics - Elementary Particles   C-3

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3130

Author   : Alpers, V.V. Barkov, L.M., Gerasimova, R.I., Gurevich, I.I., Muskhin, K.N.,
           Nikol'skiy, B.A., Toporkova, E.P.
Title   : Production of Slow $\pi^{\pm}$-mesons in the Nuclei of Photographic Emulsion by
           460 Mev Protons and Neutrons of 400 Mev Effective Energy.

Orig Pub : Zh. eksperim. i teor fiziki, 1956, 30, No 6, 1025-1033

Abstract : The emulsion-camera procedure was used to study the production of
           charged π-mesons by 460 Mev protons and by neutrons of 400 Mev
           effective energy.

Card   : 1/1

GUREVICH, J. J.

Category : USSR/Nuclear Physics - Elementary particles   C-3

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3129

Author   : Alpers, V.V., Barkov, L.M., Gerasimova, R.I., Gurevich, I.I.,
           Mishakova, A.P., Mukhin, K.N.
Title   : Production of Slow $\pi^{\pm}$ Mesons in Photographic Emulsion Nuclei by 660 Mev
           Protons.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 6, 1034-1039

Abstract : The emulsion camera procedure was used to study the production of slow
           $\pi^{\pm}$ mesons in the nuclei of the emulsion by the action of 660 Mev protons.
           The procedure used made possible an effective study of the stars with
           the production of slow π mesons, and also the energy and angular spectra
           of the slow π^- mesons produced in the nuclei.

Card   : 1/1

GUREVICH, I.I.

The data obtained by the methods of neutron spectroscopy concerning the arrange-
ment and the parameters of nuclear levels at excitation energies of the order of
the binding energy of a neutron permit investigation of the empiric rules of the
behavior of the characteristics of the level. Thereby it is possible to re-examine
and to improve existing nuclear theories. It is not possible to do without the
investigation of data obtained with the help of target nuclei with odd atomic
weight (and consequently with two systems of nuclear levels which correspond to
the spins $i + 1/2$ and $i - 1/2$) (i denotes the spin of the target nucleus). If for
each level system the distribution $W(\mathcal{E})d\mathcal{E} = \exp\{-\mathcal{E}/D\}\,d\mathcal{E}/D$ is valid (where $\mathcal{E}$
denotes the distance between levels and D the average value of the level), the re-
sulting distribution has the same form with $D = d_1 d_2/(d_1 + d_2)$. (d_1 and d_2 are the
distances between the levels in the corresponding systems).
The experimental data concerning the location of the following levels are used:
$In^{113}, In^{115}, Cs^{133}, Tb^{159}, Ho^{165}, Tm^{169}, Hf^{177}, Hf^{179}, Ta^{181}, U^{235}, U^{238}$. For the purpose
of increasing the statistical accuracy of the experimental distribution for the
levels of each isotope the values $x_i = \mathcal{E}_i/D$ were computed, following which the
distribution of the levels over the x_i was determined for all nuclei enumerated.

Žurn.eksp.i teor.fis,31,fasc.1,162-164 (1956)   CARD 2 / 2   PA - 1463

The curve which is found corresponds to the above distribution $W(\varepsilon)d\varepsilon$. A com-
parison of the curve and the histogram indicates the existence of a small re-
lative number of closely adjacent levels. This may be interpreted as a
"repulsion" of levels. The interaction between nuclear levels observed here
is similar, as regards its physical nature, to the section (crossing) of electron
terms in the spectra of diatomic molecules. The interaction of nucleons in the
nucleus causes a more equidistant distribution of nuclear levels than would be
expected according to L.D.LANDAU and JA.A.SMORODINSKIJ.
By far the greater part of the experimental data concerning the distances between
levels refers to the position of the two level systems with equal symmetry and
different spins. When interpreting the experimental data the following two dif-
ferent conditions are possible: a) The interaction of the levels of the two
systems is similar to the distribution of the levels in one system. b) The levels
of both systems are not in interaction and their reciprocal distribution is de-
termined by the laws of chance. The authors consider condition b) to be the
more probable.

INSTITUTION:

Gurevich, I. I.

USSR/Nuclear Physics - Elementary Particles

C-3

Abst Journal : Referat Zhur - Fizika, No 12, 1956, 33957

Author : Gurevich, I. I.

Institution : None

Title : On the Impossibility of Explaining the Stability of Hyperons by their Large Spins

Original
Periodical : Dokl. AN SSSR, 1956, 107, No 1, 41-42

Abstract : It is shown that large values of the spin of the Λ-particle is incompatible with the long lifetime of the Λ-nuclei. It is indicated that this result was not due to any concrete assumptions, but follows from the general premises of quantum mechanics.

Card 1/1

Category : USSR/Nuclear Physics - Elementary Particles   C-3

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 435

Author   : Alpers, V.V., Gurevich, I.I., and Mishakova, A.P.
Title   : Observation of Decays of Positive Hyperon and Single-Charge Hyperfragment

Orig Pub : Dokl. AN SSSR, 1956, 108, No 2, 207-209

Abstract : An emulsion chamber, exposed at an altitude of 27 km, detected decay of
           remaining Σ^+ hyperon, following the scheme $\Sigma^+ \to p + \pi^0 + Q$. The value of Q
           obtained was 113 ± 3.8 Mev. The hyperon was formed in a star of the
           20 + 1n type. The hyperfragment occurred in a 4 + 0n star and can be
           explained if a scheme $\Lambda^0 T^* \to p + p + n + \pi^- + Q$ is assumed for the decay.
           Two protons remained in the emulsion, the π^--meson left the chamber, and
           its energy was determined from measurements of the ionization. A value
           of 40 ± 5.8 Mev was obtained for Q, and value $B_{\Lambda^0} = -5.3 \pm 5.6$ Mev was
           obtained for the binding energy of the Λ^0 particle in the T nucleus.

Card   : 1/1

Gurevich, I. I.

1258

OBSERVATIONS OF FORMATION AND DECAY OF UN-
STABLE PARTICLES IN THE EMULSION CHAMBER. V. V.
Alpers, I. I. Gurevich, and B. V. Surkov. Doklady Akad.
Nauk S.S.S.R. 108, 411-2 (1956) May 21. (In Russian)

V. V. Alpers et al. (Doklady Akad. Nauk S.S.S.R. 105,
276(1955)) reported the data obtained during investigations
of the emulsion chamber exposed to cosmic radiation for 6
hr at 25 km elevation in Sept. 1954. Further works re-
vealed 3 additional τ mesons and one Λ^0 particle. Both
particles were found by systematic examination of separate
areas along the tracks of the chamber and identified by the
scheme . . . The en-
ergy of the particles were determined on Ilford G-5 emul-
sion . . . Observations of the first case
of τ meson decay revealed a τ^- meson with characteristic
decay term of $R = 595\mu$ range. The second τ meson
did not form any visible star on its path and could be identi-
fied as the τ^- meson. The third, after passing $R = 10560\mu$
escaped. Determination of the τ-meson charge was pre-
ceded by the various signs of τ meson at rest. The energy
from τ-meson decay was estimated as $Q = 571.3 \pm 3.7$ Mev
and the mass $M\tau = 1950.3 \pm 7.3 m_e$. The τ meson and all
three τ-meson traces lay on the same plane within $2°$
accuracy. Observations of τ-meson traces indicate that it
was formed in a $13 + 3$ n type star. None of the beams
could be identified as K mesons or hyperons. In the second

Alpers, Y.V.; Gurevich, I.I.

... the π-mesons stopped in the emulsion chamber and the μ ... after passing 6750 μ. The π-mesons ... in the emulsion chamber had ...

... energy ...

... Mev and ...

... mesons lay in the same ...

... the chamber and passed 14000 μ ...

... energy produced by both π-meson decays was smaller ...

between the point at which [...]
the star formation point. The [...]
during [...] particle be [...]
completely within the [...]
[...] The [...] captured [...]
at the [...] point produced a tri-pronged star. The
[...] decay was $Q = 30.2 \pm 1.20$ Mev
[...] and agree well with [...]
[...] R.V.J.

3/3

GUREVICH, L. L.

JANOSSY, L.

21(1)

PHASE I BOOK EXPLOITATION   HUN/1911

International Conference on Cosmic Radiation. Budapest, 1956.

International Conference on Cosmic Radiation Organized by the
Hungarian Academy of Sciences. Budapest, 1957. 187 p.
500 copies printed.

Sponsoring Agency: Magyar Tudomanyos Akademia

Eds.: E. Fenyves, and A. Somogyi

PURPOSE: This report is intended for geophysicists concerned with
cosmic radiation.

COVERAGE: This report contains the papers read at
conference. Some of the problems dealt with include nuclear
emulsions, extensive air showers and the program of cosmic
ray measurements planned for the International Geophysical
Year. Most of the reports are followed by references. Soviet
scientists in the field of cosmic radiation who attended the
conference are: E.L. Andronikashvili, N.A. Dobrotin, I.I.
Gurevich, S.I. Nikolsky and J.N. Vernov. The articles are
written in English, German and Russian without parallel trans-
lations.

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International Conference (Cont.)   HUN/1911

3. Zawadzki, A. The Density Spectrum of Extensive Air Showers   98

Chaloupka, P. A Few Remarks on the Geomagnetic Effect of
Extensive Air Showers   110

FOURTH SESSION

EMULSIONS

1. Janossy, L. On the Determination of the Energy of a Particle
From Its Track in an Emulsion.   113

2. Alper, B., J. Auslander, C. Bercea, and E.M. Friedlander. On
Mass Estimation of Singly Charged Particles in Emulsions by
Scattering Measurements   127

3. Gurevich, I.I. Study of Elementary Processes of Nuclear
Interaction by Photo Emulsion Methods   (not incl)

4. Misorcicz, M., O. Stanisz and W. Wolter. Investigation of
an Electromagnetic Cascade of Very High Energy in the
First Stage of its Development   128

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GUREVICH, I.I., PEVZNER, M.I.

USSR Academy of Sciences, Moscow

"Repulsion of Nuclear Levels," Nuclear Physics, Vol 2, No. 5, Jan 1957,

)No. Holland Publ. Co., Amsterdam)

Abst: The size distribution of level spacings in the region of compound nucleus excitation energies of the order of the neutron binding energy is considered. By analyzing available data derived by neutron spectroscopy, it is shown that the actual size distribution of level spacings qualitatively differs from random distribution. The relative number of near-lying levels is considerably smaller than for a random distribution. The conslusion is drawn that nuclear levels "repel" each other with a distribution approaching equidistance. This conclusion is based on experimental data relating mainlh to odd-mass target nuclei. Assuming naturally that only equal spin levels interact, the observed "repulsion" may prove to be less pronounced owing to overlapping of the two sets of levels.

GUREVICH, I. I.

39?8

PRODUCTION OF SLOW π⁻-MESONS IN PHOTOGRAPHIC
EMULSION NUCLEI BY 460 MEV
MEV EFFECTIVE

GUREVICH, I.I

PA - 2046

AUTHOR: AL'PERS,V.V., GUREVIC,I.I., KUTUKOVA,V.M., MISAKOVA,A.P.
NIKOL'SKIJ,B.A., SURKOVA,L.V.

TITLE: The Study of Explosion Showers produced by High Energy
Cosmic Particles (Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 1, pp 33-36
(U.S.S.R.)
Received: 2 / 1957   Reviewed: 3 / 1957

ABSTRACT: The present work deals with the preliminary results obtained
by studying 29 showers by the method of the emulsion chamber.
The emulsion chamber consisted of 100 layers of 10 cm diameter
and 450 μ thickness. This emulsion chamber was irradiated in
May 1955 for 7 hours at a height of 27 km. On the occasion of
the microscopic investigation of these emulsions the explosion
showers were fixed with more than 5 relativistic traces which
are in a sufficiently narrow cone. Furthermore, the rays were
fixed with more than 3 relativistic traces. On the occasion
of the examination of 26,5 cm^3 photoemulsion 27 explosion
showers and 29 rays were found. In the course of a further in-
vestigation of the rays through the emulsion chamber it was
found that two of them originated from stars. The remaining
27 rays were found to be electron-photon showers. On the
occasion of the microscopic investigation of the explosion
showers the primary particle which excites the shower, the

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The Study of Explosion Showers produced by High Energy
Cosmic Particles (Russian).

number of relativistic particles in the shower, and the angu-
lar distribution of the shower particles relative to the
shower axis were determined. Further, the angle Ω between
the symmetry axis of the shower and the direction of the
particle producing the shower were determined. Experimental
results are shown in a table. A diagram illustrates the de-
pendence of the number of relativistic traces in the shower
on the angle $\vartheta_{1/2}$, which encloses half of the shower par-
ticles. In the diagram the showers caused by heavy particles
form a special domain and are characterized by a considerably
larger number n_s of shower particles.

If it is assumed that the observed showers are produced by
nucleon-nucleon showers, it may be expected that the angular
distributions of the shower particles in the center of mass
system of the two colliding particles are symmetric with re-
spect to "center of mass angles" $\theta_{Sp} = \pi/2$. Next, the
formulae for transition to the center of mass system, which

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The Study of Explosion Showers produced by High Energy
Cosmic Particles (Russian).

are obtained on this occasion, are explicitly given for the
case of ultrarelativistic shower particles. By assuming a
nucleon-nucleon production mechanism of the shower we find
$n_3 = k\sqrt{\operatorname{ctg} \vartheta}_{1/2}$. Some showers satisfy this relation and
can thus be assigned to nucleon-nucleon interaction. However,
the angular distributions of the shower particles contradict
this conclusion, for a noticeable asymmetry of angular dis-
tribution was found. All showers produced by nucleons and
α-particles have a marked asymmetry with respect to the
angle $\theta = \pi/2$.

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

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GUREVICH, I.I.; MISHAKOVA, A.P.; NIKOL'SKIY, B.A.; SURKOVA, L.V.

Explosion showers produced by high energy cosmic ray particles. Zhur.
eksp. i teor. fiz. 34 no.2:265-280 F '58.   (MIRA 11:4)

1. Akademiya nauk SSSR.
          (Cosmic rays)

AUTHORS: Gurevich, I. I., Kutukova, V. M., Mishakova,   56-2-2/51
              A. P., Nikol'skiy, B. A., Surkova, L. V.

TITLE: The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$
              Decay Electrons Observed in Photographic Emulsions
              (Asimmetriya uglovogo raspredeleniya elektronov $\mu^+ \rightarrow e^+$ -
              -raspada po nablyudeniyam v fotoemul'sii)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958,
              Vol 34, Nr 2, pp 280-285 (USSR)

ABSTRACT: An emulsion chamber of 7 x 4 x 1 cm consisting of 23
              layers of an NIIKFI photographic emulsion from the P type
              was irradiated with slow positive pions of the OIYaI
              (Ob"yedinennyy institut yadernykh issledovaniy - United
              Institute for Nuclear Research) synchrocyclotron. The chamber
              was mounted in a double magnetic screen in order to make
              sure that the scattered magnetic field of the synchrotron
              did not lead to a precession of the spin of the myon. In
              looking through the emulsions after developing those cases
              were selected where the whole myon track of the $\pi \rightarrow \mu$-decay
Card 1/3   is situated in a single layer of the emulsion. In this the

The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$ Decay   56-2-2/51
Electrons Observed in Photographic Emulsions

myon is supposed to come to a standstill after the passage
through at least 50μ of the surface of the non-developed
layer of emulsion. The authors determined the angle α
between the direction of emission of the myon in the $\pi \rightarrow \mu$-
-decay and that of the electron of the $\mu \rightarrow$ e-decay by
determining the angle α between these directions on the
emulsion level and the angle of sitribution β_1, β_2 resp. of
the traces of the myon, the electron towards the level of
emulsion resp.. Furthermore an emulsion chamber of the same
dimensions was irradiated with slow positive pions. The
results of measurements are collected in a table. The angular
distributions determined this way are shown by a diagram;
they do not contradict the theoretical dependence 1 + a cosθ,
$a = (\lambda/3)(1 - \gamma)$, where γ denotes the depolarization
coefficient of myons. A relation for the determination of the
optimum value of a is given. The magnetic field ($H \sim 1100$ G)
increases a little the asymmetry, i.e. it decreases the
depolarization of the myons in the emulsion. But this effect
is not regarded as strictly proved. The mean value of the
parameter a calculated from the results of this work in

Card 2/3 $a = -(0,108 \pm 0,0094)$. The angular distribution for 13770μ

The Asymmetry in the Angular Distribution of $\mu^+ \rightarrow e^+$ Decay   56-2-2/51
Electrons Observed in Photographic Emulsions

$\rightarrow$ decay processes proceeding from the results of various
previous works and from those of the present investigation
is also shown in a diagram. Within the error limits the
angular distribution of the electrons of the relation 1 +
+ a cosϑ,is sufficient, where $a = -(0,111 \pm 0,015)$. There
are 2 figures, 2 tables, and 13 references, 1 of which is
Slavic.

ASSOCIATION: AS USSR (Akademiya nauk SSSR)

SUBMITTED: August 14, 1957

AVAILABLE: Library of Congress

1. Photographic emulsions-Irradiation   2. Electrons-Distribution

Card 3/3

GUREVICH, I. I.

"ELECTRON-PHOTON CASCADES WITH ENERGIES FROM 10^{11} TO 10^{-13} ev IN NUCLEAR EMULSIONS"

A. S. Romantseva, A. A. Varfolomeyev, R.I. Gerasimova, I.I. Gurevich, L.A. Makaryina, S.A. Chuyeva

Fifteen electron-photon cascades with energies from 10^{11} to 10^{13} ev, recorded in six emulsion stacks with a total volume of 10 l, have been investigated.

The energies of the primary photons evoking the cascades were determined by the energy spectrum of the cascade electrons at a depth of $2.5 \div 3$ to $(t_0$ - rad. unit).

The grain density and the gap density were measured for the first pairs. In all the pairs with energies 3×10^{11} ev, a decrease in grain density at the apex caused by the screening effect was discovered.

The following experimental relation of the ionization looses of pair (1) was obtained:

Where Iperis the specific ionization electron loss at the ionization plateau, x is the distance from the apes of the pair in cm, and E is the energy of the photon which produced the pair.

The expression obtained for I/2lpe may be used to determine the E energy from experimental values for I. An estimation of the E error is given, taking into consideration the screening effect.

The number of electron-position pairs produced at depths of $1.ot^0$ and $1.5$to was measured.

GUREVICH, I.I. (CONTINUED)

The results agree with the calculated data obtained by the Monte method, taking into consideration the effect of the medium of Bremstrahlung (Landau-Pomeranckuk and Ter-Mikaelyn effects).

report presented at the International Cosmic Ray Comference, Moscow 6-11 July 1959

For 10 cascades with E 1.8x10^{11} ev, the probability of p ( )^2 from the criterion / 2, is 2.5 * when compared with the curves whichdo not consider the effect of the medium, and 80-95% when compared with the calculations that take into consideration the effect of the medium on the Bremsstrahlung.

24(3), 21(7)   SOV/56-36-4-65/70
AUTHORS: Ali-Zade, S. A., Gurevich, I. I., Dobretsov, Yu. P.,
              Nikol'skiy, B. A., Surkova, L. V.

TITLE: The Asymmetry of Electron Angular Distribution in $\mu^+ \to e^+$-Decay
              in a Magnetic Field of 27000 G (Asimmetriya uglovogo raspredeleniya
              elektronov $\mu^+ \to e^+$-raspada v magnitnom pole 27000 G)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36,
              Nr 4, pp 1327-1329 (USSR)

ABSTRACT: If angular distribution is described by the expression
              $4\pi dN/do = 1 - a \cos\theta$ (a $= \lambda P/3 = a_0 P$; $\lambda = 3a_0 = -\cos(V,A)$ char-

              acterizes the ratio of the vectorial and pseudovectorial share
              of interaction in $\mu \to e$-decay; P denotes muon polarization), it
              is found that the quantity a depends both on the measuring meth-
              od and on the nature of the depolarized matter. It attains a
              maximum value of a $= 1/3$ at $\cos(A,V) = -1$. For NIKFI-R emulsions
              a was determined as amounting to 0.092 ± 0.018, for Ilford G-5
              it was 0.14. The maximum value attained by a for graphite is
              0.303 ± 0.048. The depolarizing property of matter may be reduced
              by applying strong magnetic fields, the direction of which co-
Card 1/3   incides with muon polarization. The increase of a brought about

SOV/56-36-4-65/70

The Asymmetry of Electron Angular Distribution in $\mu^+ \to e^+$-Decay in a Magnetic Field of 27000 G

by magnetic field can be described by $a = a_0\left[1 - \dfrac{0.5}{1+(\mu H/\Delta E)^2}\right]$; a_0 denotes the a-value if no depolarization takes place, ΔE - the energy of fine-structure splitting of the μ-mesic atom in the ^1S-state. An experimental checking of this formula in fields of up to 14000 G showed that by it the dependence a(H) is quali- tatively described. The authors determined a in the $\pi \to \mu \to e$- decay in photoemulsions at H = 27000 G. a was determined from the ratio $a = 2(N_{backward} - N_{forward})/(N_{backward} + N_{forward})$. Results:

For $\theta = 0 - 30°$ $a_1 = 0.315 \pm 0.026$

    $\theta = 150 - 180°$ $a_2 = 0.295 \pm 0.027$.

Mean value formation averaged over the directions in which muons fly off gives: $a_3 = 0.305 \pm 0.019$. If $a_{real} = a_3/\cos\theta$, one ob- tains $a_{real} = a_3/0.940 = 0.324 \pm 0.020$. Herefrom it follows that $|\lambda|P = 0.972 \pm 0.06$, i.e. $|\lambda|$ with an accuracy of up to a

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SOV/56-36-4-65/70

The Asymmetry of Electron Angular Distribution in $\mu^+ \rightarrow e^+$-Decay in a Magnetic Field of 27000 G

statistical error of $\pm$ 6% attains its maximum value and P $\approx$ 1. This indicates a considerable degree of inaccuracy of the formula describing a(H). The authors finally thank B. S. Neganov and B. V. Sokolov for their help in irradiating the photoemulsions, D. M. Samoylovich for developing the emulsion, and further also V. M. Kutukova, A. M. Alpers, and G. V. Pleshivtseva for their assistance. There are 8 references, 2 of which are Soviet.

SUBMITTED: February 1, 1959

Card 3/3

2? (7)

AUTHORS: Gurevich, I. I., Nikol'skiy, B. A.   SOV/56-37-1-58/64
Surkova, L. V.

TITLE: Three-Electron Decay of the μ-Meson (Trekhelektronnyy raspad μ-mezona)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1, pp 318 - 319 (USSR)

ABSTRACT: The authors of the present "Letter to the Editor", when investigating the asymmetry of the angular electron distribution of $\pi \to \mu \to$ e-decay, observed that in one case three relativistic electrons depart from the stopping point of the μ-meson (cf. figure). All three electrons have large inclination angles with respect to the emulsion plane, and therefore exact measurement of grain density was impossible; it was, however, near that for relativistic particles (energy ~1 Mev). The recorded part of the electron path length: $L_{e_1} = 455$ μ, $L_{e_2} = 562$ μ, $L_{e_3} = 455$ μ.

The muon range amounts to $R_\mu = 598$ μ in the case of an average path length of the muon of the $\pi \to \mu$-decay in a R-NIKFI-emulsion of 602 μ. The angles between the electrons: $\theta_{12} = 8.6°$, $\theta_{13} =$

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Three-Electron Decay of the μ-Meson   SOV/56-37-1-58/64

$= 10.6^\circ$, $\theta_{23} = 10.5^\circ$. The case observed cannot be interpreted as a muon decay in electron $+ \gamma$ with a transformation of the quantum into electron + positron at the place of decay, because in this case the direction of the departure of the particle pairs would have had to be opposite to the observed direction of flight of the decay electrons. The explanations $\mu^+ \rightarrow e^+ + + e^+ + e^- + \nu + \tilde{\nu}$ or $\mu^+ \rightarrow e^+ + \nu + \tilde{\nu} + \gamma$ with following transformation of the quantum into a pair would be possible. The case described here was observed in connection with the evaluation of about 50,000 muon decays. Thus, the "three-electron" decay probability of the muon may be estimated at $p(3e)/p(e) \leqslant 2 \cdot 10^{-5}$. If the results obtained by other authors are taken into account, a probability of 10^{-6} is obtained. This order of magnitude is obtained also if a radiation process of second order is assumed; emission of a virtual γ-quantum accompanying the departure of the electron with following transformation into an electron-positron pair, the pair energy of which may be estimated as amount-

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Three-Electron Decay of the μ-Meson   SOV/56-37-1-58/64

     ing to 15 Mev. The authors finally thank I. S. Shapiro for dis-
     cussions. There is 1 figure.

SUBMITTED: April 17, 1959

Card 3/3

GUREVICH, I.I.; POMERANCHUK, I.Ya.

[Theory of resonance absorption in heterogeneous systems] Teoriia
rezonansnogo pogloshcheniia v geterogennykh sistemakh. Moskva,
1955. 18 p.   (MIRA 14:6)
        (Nuclear resonance and relaxation)

31541
S/627/60/002/000/024/027
D299/D304

3.24/0 (1805, 2705, 2805)

AUTHORS: Varfolomeyev, A. A., Gerasimova, R. I., Gurevich, I.I.,
            Makar'ina, L.A., Romantseva, A. S., and Chuyeva, S. A.

TITLE: Electron-photon showers with energies of $11^{11} - 10^{13}$ ev.
            in nuclear emulsions

SOURCE: International Conference on Cosmic Radiation. Moscow,
            1959. Trudy. v. 2. Shirokiye atmosfernyye livni i kas-
            kadnyye protsessy, 299-306

TEXT: A detailed investigation was carried out of 15 electron-pho-
ton showers with energies $> 10^{11}$ ev., at low depths. In contradis-
tinction to other works, the results are compared with those ob-
tained for cascades by the Monte Carlo method. Six emulsion stacks
were used, with total volume of about 10 liters. In 5 of the
stacks of emulsion Р-НИКФИ (R-NIKFI), the grain density of relati-
vistic electrons was 30 - 35 grains per 100 μ. The energy E_γ of
primary quanta which generate the shower, was determined from the

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Electron-photon showers ...

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number of cascade electrons of energy higher than $\mathcal{E}_c$ = 300 Mev, at a depth of 2.5 - 3.0 t_o. A table lists (for comparison) the values of E_γ, obtained by the Monte Carlo method and by formula

$$R = \frac{1}{16,1} \left\{ 45,0 + \ln \left[\left(\frac{2x}{E} \right)^2 (1 + 140\ x) \right] \right\} \tag{1}$$

where x is the distance from the pair vertex in cm; this formula is semiempirical and represents the ratio of ionization losses of pairs to those of relativistic electrons; the ionization losses are due to mutual shielding of electron and positron fields. In the experiments, particular care was taken to detect the vertices of the electron-positron pairs, formed at depths $\leqslant 1.5\ t_o$ - After determining the lateral shower distribution, the energy of the electrons of the pairs was measured by means of multiple scattering (to an accu-

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Electron-photon showers ...   D299/D304

racy of 20 - 30%) for energies of up to $(5-7) \cdot 10^8$ ev. The total
number of pairs formed at depths $\leqslant 1.0$ t_0 and $\leqslant 1.5$ t_0 with energies
higher than (1-2) Mev, is plotted in two figures, from which it is
evident that the experimental points fit better the curve which
takes into consideration the influence of the medium on the brems-
strahlung (the curve obtained by Migdal's formula); the curve ob-
tained by Bethe-Heitler's formula does not fit the experimental re-
sults. The figures also show that not one of the 15 showers under
consideration is anomalous. Apparently, the majority of so-called
"anomalous" showers, described in literature, can be explained by
statistical fluctuations in the cascades or by improper determina-
tion of the energy of primary electron-positron pairs. Another fi-
gure exhibits the experimental curves of longitudinal shower de-
velopment; here, too, no appreciable deviations from the corres-
ponding theoretical curves are observed. A table lists data on the
number of pairs formed at small distances $r < 0.5\mu$ from the nearest
electron track; these data might be useful in analyzing the cross-
section for pair formation by high-energy electrons. There are 4

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Electron-photon showers ...

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D299/D304

figures, 3 tables and 21 references: 10 Soviet-bloc and 11 non-So-
viet-bloc. The 4 most recent references to the English-language
publications read as follows: K. Pinkau. Nuovo Cim., 3, 1285, 1956;
H. Fay. Nuovo Cim., 5, 293, 1957; J. Iwadare. Phil. Mag., 3, 680,
1958; S. K. Srnivasan, J. S. Butcher, B. A. Chartres, H. Messel.
Nuovo Cim., 9, 77, 1958.

Card 4/4

GUREVICH, I.I.; YAREMENKO, A.I.

"Heavily loaded hydrogen diffusion electrodes operating at low pressure and at the temperature of the surrounding medium" by E.Justi and others. Reviewed by I.I. Gurevich, A.I. IAremenko. Inzh.-fiz. zhur. no.9:138-141 S '60.   (MIRA 13:9)
          (Electrodes)   (Hydrogen)
          (Justi,E.)   (Pilkun, M.) (Scheibe, W.) (Winsel, A.)

VARFOLOMEYEV, A.A.; GERASIMOVA, R.I.; GUREVICH, I.I.; MAKAR'INA, L.A.;
    ROMANTSEVA, A.S.; CHUYEVA, S.A.

Effect of the density of the medium on bremsstrahlung in electron-
photon showers involving energies from 10^{11} to 10^{13} ev. Zhur.
eksp. i teor. fiz. 38 no.1:33-45 Jan '60.   (MIRA 14:9)
            (Bremsstrahlung) (Cosmic rays)

GUREVICH, I.I.

"Kinematics of nuclear reactions" by A.M.Baldin, V.I.Gol'danskii,
I.L.Rozental'. Reviewed by I.I.Gurevich. Usp. fiz. nauk 77
no.2:323-324 0 '60.   (MIRA 16:8)
 (Nuclear reactions) (Baldin, A.M.) (Gol'danskii, V.I.)
                        (Rozental', I.L.)

S/056/61/040/002/009/047
B113/B214

AUTHORS: Ali-Zade, S. A., Gurevich, I. I., Nikol'skiy, B. A.

TITLE: Asymmetry of the angular distribution of electrons of
             μ-e decay in magnetic fields of strengths up to 35,000 oe

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
             no. 2, 1961, 452-456

TEXT: Taking into account the multiple exchange of electrons in muonium
production, the mechanism of muon depolarization has been studied in
earlier papers and the equation $a^* = a[1-0.5/(1+x^2+\tau^{-2})]^n$ (3) obtained.
Here, n denotes the number of exchanges with electrons, τ the mean life-
time of a muonium atom in the units $\hbar/\Delta E = 3.58 \cdot 10^{-11}$ sec, $a^* = Pa$, where
P is the degree of residual polarization of the muon on stopping in the
moderator, and a ist the asymmetry parameter. The present paper is con-
cerned with the investigation of the asymmetry of angular distribution of
electrons of μ-e decay in magnetic fields up to 35,000 oe, and with the
explanation of the function $a^*(H)$ in a wide range of H. For carrying out

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the experiment, the photoemulsion chambers were bombarded with slow π^+ mesons so that the muons were stopped in the chamber. From the events of $\pi-\mu-e$ decay such were selected, in which the direction of emission of the muon formed angles of $\beta = 0-30°$ and $\beta = 180-150°$ with the direction of the magnetic field. Only those events of $\pi-\mu$ decay were considered, in which the muon range was greater than or equal to $\Delta = 15\mu$ measured from the surface of the emulsion. In all, a total of 177,850 events of $\pi-\mu-e$ decay were recorded in accordance with these selection rules. The angle between the direction of emission of the electron and the direction of the magnetic field was projected onto the surface of the emulsion and the projected angle measured. The value of the coefficient a^* was determined from the equation: $a_3^* = 2[N(\alpha > 90°)-N(\alpha < 90°)]/[N(\alpha > 90°) + N(\alpha < 90°)]$ (4). The corrected value of a^* was obtained from the equation $a^* = a_3/\overline{\cos\beta}$ (5). No abnormal muon decays were found in the $\pi-\mu-e$ decay. Table 1 gives the values of a^* obtained from Eq. (4) and (5) for emulsions with normal gelatin content. The values of a^* are given also for the muons in the direction (↑) ($\beta < 30°$) and in the direction (↓) ($\beta > 150°$) of the magnetic field. δa^* denote the standard

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Asymmetry of the angular...

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errors ($\delta a = 2\sqrt{N}$). The values obtained for higher gelatin content are: $a^*(\uparrow) = 0.297 \pm 0.013$ and $a^*(\downarrow) = 0.305 \pm 0.013$. The following conclusions are drawn from the data obtained here: 1) When muons are slowed down in a medium situated in a longitudinal magnetic field having a strength of $20,000 \div 30,000$ oe, a^* does not reach the maximum theoretical value of $1/3$. 2) a^* increases with increasing strength of the field from 10,000 to 35,000 oe even on diluting the emulsion. This result is, however, statistically not so reliable as the first. With the data obtained it is possible to check the correctness of the function $a^*(H)$. A comparison of the theoretical and experimental functions shows that in Eq. (3) the function $P_{exp}(x)$ is not adequately taken into account.

V. P. Dzhelepov is thanked for according the possibility of bombarding the photoemulsions on the synchrocyclotron of OIYaI, D. M. Samoylovich for developing the photoemulsions, and W. M. Kutukov, A. M. Alpers, G. V. Pleshivtsev, S. A. Chuyev, B. V. Sokolov, and L. V. Surkov for assistance. There are 1 figure, 2 tables, and 8 references: 3 Soviet-bloc and 5 non-Soviet-bloc.

SUBMITTED: August 24, 1960

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28931
S/056/61/041/004/015/019
B111/B112

$\mathcal{U}\cdot\gamma L\,4\int$

AUTHORS: Gurevich, I. I., Nemirovskiy, P. E.

TITLE: "Metallic" reflection of neutrons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
             no. 4, 1961, 1175 - 1177

TEXT: There are various types of neutron mirrors, all of which use
metallic neutron reflection from strongly absorbing media. In general, it
is assumed that the reflecting medium absorbs weakly and that the neutron
wave number is real. The imaginary part cannot be neglected in strongly
absorbing media $(k = k_1 + ik_2)$. If the medium is hit by a neutron current
having the wave number k_0 one obtains: $k^2 = k_0^2 + (\hbar/2m)U$, where U is the
potential in the medium, i.e., $k^2 = k_0^2 \mp \alpha + ik_1 \rho \bar{\sigma}_c$, where
$\alpha = \rho \left[4\pi \bar{\sigma}_s - (k_1 \bar{\sigma}_c)^2 \right]^{1/2}$. $\bar{\sigma}_s$ is the total scattering cross section,
$\bar{\sigma}_c$ is the total absorption cross section, and ρ is the number of nuclei
per cm^3. For a very small energy one obtains $k_1 = k_2 = \rho \bar{\sigma}_c/2$; the

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"Metallic" reflection of neutrons

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S/056/61/041/004/015/019
B111/B112

index of refraction, n, is given by $n = \frac{\rho \bar{\sigma}_c}{k_o} (1 + i)$. For $|n| \gg 1$ the

reflection coefficient R is given by:: $R = 1 - \frac{4k_o}{\rho \bar{\sigma}_c} \cos \vartheta$, where ϑ is the

angle with the normal. If the potential scattering cannot be neglected,

R is given by: $R = 1 - 4k_1 k_o \cos \vartheta / (k_1^2 + k_2^2)$. For $k_o \to 0$ one obtains

$k_1^2 = (\rho a)^2 / 4k_1^2 \mp \alpha$. For neutrons whose energy is zero in a vacuum, the

maximum absorption cross section is $\sigma_{c\,max} = a \left[\frac{1}{2} (\rho^2 a^2 + \alpha^2)^{1/2} - \frac{1}{2} \alpha \right]^{-1/2}$.

If $\alpha \ll \rho a$, then the following expressions are valid: $\sigma_{c\,max} = \sqrt{\frac{2a}{\rho}}$ and

$R = 1 - 4k_o (2a\rho)^{-1/2} \cos \vartheta$. From Gd^{157} the authors conclude that metallic
neutron reflection is less effective for the production of neutron mirrors
than other methods. It is noted that natural vibrations of the atoms will
not change the two last-mentioned formulas, since the Doppler effect does
not influence cross sections satisfying the 1/v law. There are 4 refer-
ences: 3 Soviet and 1 non-Soviet. The reference to the English-language
publication reads as follows: M. Goldberger, F. Seitz, Phys. Rev., 71,
Card 2/3

"Metallic" reflection of neutrons

294, 1947.

SUBMITTED: April 22, 1961

28931
S/056/61/041/004/015/019
B111/B112

Card 3/3

GUREVICH, I. I. and NIKOLSKIY, B. A.

"Angular distribution of $\pi \to \mu \to e$ electrons."

report presented at Intl. Conference on High Energy Physics, Geneva,
4-11 July 1962

GUREVICH, I. I.

"The Coherent Effects in Bremsstrahlung of Ultra-Relativistic"

report presented at the Intl Conference on High Energy Physics, Geneva,
4-11 July 1962

GUREVICH, I.I.; NEMIROVSKIY, P.E.

"Metallic" reflection of neutrons. Zhur.eksp.i teor.fiz. 41
no.4:1175-1177 O '61.   (MIRA 14:10)

(Neutrons—Capture)

24.6700

S/056/62/043/002/049/053
B108/B102

AUTHORS: Gurevich, I. I., Nikol'skiy, B. A.

TITLE: Angular distribution of decay electrons from $\pi^+ \to \mu^+ \to e^+$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 2(8), 1962, 724-725

TEXT: The theory of V-A interaction predicts an angular distribution of electrons from a $\pi \to \mu \to e$ decay event of the form $dN/d\vartheta \sim (1 - a \cos\vartheta)$. This law was checked on by experiments (photoemulsion). The experimental results showed that the above law with $a = 0.270 \pm 0.006$ is a good rendering of what actually happens. There is 1 figure.

ASSOCIATION: Institut atomnoy energii Akademii nauk SSSR (Institute of Atomic Energy of the Academy of Sciences USSR)

SUBMITTED: May 17, 1962

Card 1/1

41686

S/823/62/000/000/002/007
B125/B102

AUTHOR: Gurevich, I. I.

TITLE: Elementary investigation of the influence exerted by the density of a medium on bremsstrahlung

SOURCE: Nekotoryye voprosy fiziki elementarnykh chastits i atomnogo yadra. Ed. by V. D. Mikhaylov and I. L. Rozental'. Mosk. inzh.-fiz. inst. Moscow, Gosatomizdat, 1962, 72-76

TEXT: In essence the attenuation of bremsstrahlung by polarization of the medium and by multiple scattering is of a purely classical nature, so the two effects here interplaying were examined in an elementary way. The energy of the electron is assumed to be much greater than its mass. A constructive interference of elementary waves is said to occur over a "coherent distance" which is $l_o \simeq E^2/\omega m^2$ in vacuo when the phase difference of elementary waves emitted during a time t is $\Delta\varphi = (1-v)t/\lambda - 1/2$. The coherent distance in a medium is

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S/823/62/000/000/002/007
B125/B102

Elementary investigation of the...

$$l \cong \frac{l_0}{1 + \left(\frac{E}{m}\right)^3 \frac{\omega_0^2}{\omega^2} + \left(\frac{E_s}{m}\right)^2 \cdot \frac{l}{L}} . \qquad (6),$$

where E is the electron energy, L is the radiation length, ω_0 and ω are the
photon frequencies in vacuo and in the medium, respectively, and
$E_s = (4\pi \cdot 137)^{1/2} \cdot m \simeq 21$ Mev. From the formulas for the attenuation factor
$q = l/l_0$ of bremsstrahlung due to these effects,

$$q(E, \omega) = \frac{dl}{dl_0} = \frac{l}{l_0} , \qquad (7)$$

and

$$q(E, \omega) = \frac{1}{1 + \left(\frac{E}{m}\right)^3 \cdot \frac{\omega_0^2}{\omega^2} + \left(\frac{EE_s}{m^2}\right)^2 \frac{q}{L\omega}} . \qquad (8),$$

it follows that $q = q_s = m_s^2 \sqrt{L\omega}/EE_s$ when $\qquad 1 + \left(\frac{E}{m}\right)^2 \frac{\omega_0^2}{\omega^2} \ll \left(\frac{EE_s}{m^3}\right)^5 \frac{q}{L\omega} , \qquad (8b).$

Card 2/3

ACCESSION NR: AP4017154   S/0053/64/082/002/0177/0199

AUTHORS: Gurevich, I. I.; Nikol'skiy, B. A.

TITLE: Neutral K mesons

SOURCE: Uspekhi fizicheskikh nauk, v. 82, no. 2, 1964, 177-199

TOPIC TAGS: kaon, K meson, neutral K meson, antikaon, kaon mass difference, kaon lifetime, kaon lepton decay, kaon isotopic properties, charge invariance, strangeness conservation, coherent K_1^0 meson generation, incoherent K_1^0 meson generation

ABSTRACT: This is a brief summary of the most recent literature. Some of the unusual properties that differentiate neutral kaons from genuinely neutral particles are reviewed, particularly with respect to charge invariance. The properties of the two different neutral kaons K_1^0 and K_2^0 are reviewed and recent experimental data are report-

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ACCESSION NR: AP4017154

ed on the differences in their lifetimes and masses. Coherent and incoherent generation of K_1^0 mesons by passage of a K_2^0 beam through matter, and a related method of determining the mass difference be-. tween the two, are discussed. Experiments proposed to establish the sign of the mass difference are described. Other neutral kaon properties are also reviewed. The section headings are: 1. Two types of neutral K mesons. 2. Lifetimes of K_1^0 and K_2^0 mesons. 3. Mass difference of K_1^0 and K_2^0 mesons. 4. Generation of K_1^0 mesons in K_2^0 beam. 5. Which is heavier, K_1^0 or K_2^0? 6. Wave properties of systems of neutral kaons. 7. Lepton decays of neutral K mesons. The $\Delta S = \Delta Q$ rule. 8. Isotopic properties of neutral K mesons. Orig. art. has: 2 figures, 30 formulas, and 2 tables.

ASSOCIATION: None

Card   2/3

GUREVICH, I.I., inzh.; SATANOVSKIY, R.L., inzh.

Overall mechanization and automation of production processes in
manufacturing standard parts of instruments. Mekh. i avtom.proizv.
19 no.1:4-6   Ja ·65.   (MIRA 18:3)

L 8202-66   JXT(C2)

ACC NR: AT5022299   SOURCE CODE: UR/3136/64/000/620/0001/0011

AUTHOR: Gurevich, I. I.; Makar'ina, L. A.; Nikol'skiy, B. A.; Sokolov, B. V.;
Surkova, L. V.; Khakimov, S. Kh.; Shestakov, V. D.; Dobretsov, Yu. P.; Akhmanov, V.
V.

ORG: [Gurevich, Makar'ina, Nikol'skiy, Sokolov, Surkova, Khakimov, Shestakov] IAE;
[Dobretsov] MIFI; [Akhmanov] LYaP OIYaI

TITLE: Asymmetry of the angular distribution of electrons in the decay $\pi^+ \to \mu^+ \to e^+$
in a magnetic field of 140,000 gauss

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-620, 1964; Asimmetriya uglo-
vogo raspredeleniya elektronov pi plus → mu plus → e plus raspada v magnitnom pole
napryazhennost'yu 140 000 gauss, 1-11

TOPIC TAGS: mu meson, pi meson, positron, bubble chamber, radioactive decay

ABSTRACT: The universal V-A coupling theory applied to the determination of the an-
gular distribution of electrons in the reaction $\pi^+ \to \mu^+ \to e^+$ is given by

$$\frac{dN}{d\theta} \sim 1 - \alpha \cos \theta_e$$

in terms of the parameter α. In order to obtain a value of α which depends on the
polarization state of the meson, an experiment was performed showing the effect coun-
tering the depolarization of the dense medium through which the meson is moving.

Card 1/2

L 8202-66

ACC NR: AT5022299 $\bigcirc$

Critical magnetic fields needed to oppose the depolarizing effect, which in turn al-
lows more accurate determination of the parameter a, were found. Only 8800 gauss
were required in the hydrogen bubble chamber to counter the effect of hydrogen de-
polarization. However, the scatter in the value is quite large. The photographic
emulsion yielded much smaller scatter but required an application of a very large
magnetic field of 140,000 gauss. The value of a found in the experiment is 0.325 $\pm$
.010 (as compared to the theoretical value of 0.333). This value was obtained by
analyzing over 66,000 events. A brief discussion is given of the effect of the mag-
netic field on the motion of the electron. It is shown that the electron direction
must be measured with respect to the magnetic field direction after setting certain
constraints on the selection of the angular range. Orig. art. has: 3 figures, 1
table, 5 formulas.

SUB CODE: 18/   SUBM DATE: 00/   ORIG REF: 005/   OTH REF: 007

        nw
Card 2/2

GUREVICH, Isay Isidorovich; TARASOV, Lev Vasil'yevich; KOZLOV,
V.D., red.

[Physics of low-energy neutrons] Fizika neytronov niz-
kikh energii. Moskva, Nauka, 1965. 607 p.
(MIRA 19:1)

CA

Production of high-viscosity cylinder distillates and road bitumens by distillation of tars in mixture with gasoline. I. L. Gurevich. Trudy Moskov. Neftvan. Inst. im. I. M. Gubkina 1948, 141-4.—Petroleum asphalt (d_o 0.9728, K_o 7.68) from a heavy oil was mixed in ratio 3:1 with a gasoline fraction (b. 45-150°, d_o 0.7311) and distd. in a tubular still at 340-90° and 71 mm. Bitumens of the first 3 qualities, with good tensility and high d. and v were obtained. Production of road bitumens from cracking residues of two-coil cracking. I. L. Gurevich and O. D. Khavkina. Ibid. 144-52.—Bitumens were produced from two-coil cracking residues by 4 methods: (1) vacuum distn., (2) steam-vacuum distn., (3) direct oxidation at 160-200°, air input 2.4-8 l./min., for 4-44 hrs., and (4) continuous oxidation through a series of 3 vertical stills of a concentrate of products of (1) and (2). Method (1) yielded grade 2 and 3 bitumens of good tensility, (2) gave grade 3 bitumen and (3) gave grade 2 and 3 bitumens of low tensility. Method (3) was varied by mixing the tar from (1) with cracking residue. Grades 2 and 3 bitumens of low tensility were obtained. Method (4) yielded grade 4 and 5 bitumens.   Nancy Corbin

C A

22

Continuous production of ceresin and petrolatum from ozocerite without sulfuric acid. I. L. Gurevich. *Trudy Moskov. Neftyan. Inst. im. I. M. Gubkina* 1946, 152–8. — Melted ozocerite crude is dissolved in gasoline or ligroin, the soln. is heated, percolated through activated clay, and rectified. The tail fractions contain petrolatum and white ceresin and the residue consists of yellowish ceresin. To produce only white and yellow ceresins, distn. takes place first, and all fractions, including residue, are percolated through activated clay. Yield can be improved by extg. the ozocerite ore with gasoline or ligroin instead of boiling water.   Nancy Corbin

GUREVICH, I. L.

   "Operations and Equipment of Refineries", (Excert), Gostoptekhizdat 1952.

SO: Petroleum Technology, Part 1, 1952.

GUREVICH, I. L.

PHASE I

BOOK   Call No.: TP690.G766
  Author: Gurevich, I.L.
  Full Title: OIL TECHNOLOGY; PART I: GENERAL DATA AND PRIMARY DISTILLATION OF OILS
  Transliterated Title: Tekhnologiia nefti; Chast' I: Obshchie svoistva i pervichnaia.
                         peregonka neftei.
Publishing Data
  Originating Agency: None.
  Publishing House: State Scientific and Technical Publishing House of Petroelum and
                     Mineral Fuel Literature
  Date: 1952.   No. pp.: 423   No. of copies: 6,000
  Editorial Staff:
    Editor: None.   Tech. Ed.: None.
    Ed.-in-Chief: None.   Appraiser: None.
Text Data
  Coverage: A textbook on oils and oil products: chemical and physical properties,
             classification, description of products, oil refining processes and
             equipment, and primary distillation. The development of the Soviet
             oil industry is briefly traced. 284 Diagrams.
  Purpose: A textbook for students and technicians.
  Facilities:
No. Russian and Slavic References: None.
Available: Library of Congress.

Urea dewaxing of a wide naphtha fraction (120–470°) from Yulnyn (China) [crude oil]. I. L. Gurevich, Chzhen-yun Vei, and V. A. Shchenikova. Khim. i [spiksel.] [Topliva i Masel] 1957, No. 5, 60–66. —Yulnyn naphtha is low in S (0.25%) and high in asphalt (27%), and has a wax content > 13%. Asphalt free stock, urea, and C_2H_5 are mixed at room temp. in a 250-ml. three-neck flask, after which an activator (also, acetone, dichloroethane, or water) is added, stirring is continued for 45–60 min., and the reaction products are removed by filtration. The urea adduct is decompd. by hot water. It was found that (1) water can be used as activator, (2) the type of solvent affects adduct formation only slightly, and (3) the no. of treating steps has only a slight effect on the yield for a given amt. of urea.
—————R. Delfin

GUREVICH, I. L.

"On the Problem of Petroleum Desulfurization"

Composition and Properties of the High Molecular Weight Fraction of
Petroleum; Collection of Papers, Moscow, Izd-vo AN SSSR, 1956. 370pp. (Inta nefti)
    2nd Collection of papers publ. by AU Conference, Jan 56, Moscow.

    The author describes the continuous desulfurization of crudes by means of
the MNI adsorption method. Variation of the adsorbent - crude ratio controls
the sulfur content of the various fractions. The article gives 3 figures.
There are no references.

SOV/137-58-10-21282

Transaltion from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 120 (USSR)

AUTHORS: Gurevich, I. L., Dybovskiy, R. K., Kalinin, A. T., Veselov, B. P.

TITLE: Liquid Carburizer for Gas Carburization of Steel (Zhidkiy karb-
yurizator dlya gazovoy tsementatsii stali)

PERIODICAL: Materialy Mezhvuz. nauchn. soveshchaniya po vopr. novoy
tekhn. v neft. prom-sti, 1958, Vol 3, pp 206-223

. ABSTRACT: An investigation was conducted on the gas carburization (GC)
of specimens of Nr-20 and 18KhGT-grades of steel in a labora-
tory furnace and in a small type Ts-25 shaft kiln using various
liquid carburizers (C); lamp kerosene was used as the standard
C. It is indicated that at GC temperatures of 925 - 930°C, a
duration of 1.5 hours or 5 hours and at the optimum feeding
rate for each C, the employment of alkane C ensures advan-
tages over the use of aromatic C in the total depth of the layer,
the magnitudes of the transitional and eutectoid zones, and the
degree of carburization of a control wire 1.5 mm in diameter.
The best results were obtained using synthol with a boiling-
point range of 48 - 246°. When sooty products of decomposition
of C are present in the muffle, GC showed that alkane C,

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SOV/137-58-10-21282

Liquid Carburizer for Gas Carburization of Steel

especially synthols with 48 - 246° and 69 - 302° boiling-point ranges, decrease
the carburizing capacity less than the aromatic C. The greatest evolution of
coke-soot was produced by the aromatic C. Comparative data on GC of machine
parts of the DT-54-type tractor of 18KhGT-grade steel in continuous furnaces
of the heat-treatment shop of the KhTZ [Khar'kovskiy Traktornyy Zavod
(Khar'kov Tractor Plant)] showed that compared to the employment of kerosene
the increase in the productivity for 100 - 231°, 101 - 305°, and 195 - 312°
fractions are by 24, 51, and 40%, respectively, while the decreases in the
amount of the coke-soot deposition are by 50, 35, and 41%, respectively.
When synthols are used, a loose soot is produced which is easily washed off
with the oil in quenching tanks, corrosion produced by the presence of S is
prevented, and the consumption of C per operation is decreased. Technical
specifications (TU 574 - 55) are developed for two types of C: synthol 100 -
300° for continuous furnaces and synthol 100 - 230° for shaft kilns.

1. Steel--Carbonization   2. Kerosene--Performance

L. F.

Card 2/2

SOV/81-59-7-24828

Translation from: Referativnyy znurnal. Khimiya, 1959, Nr 7, p 466 (USSR)

AUTHOR: Gurevich, I.L.

TITLE: The Problem of Desulfuration of Petroleum"

PERIODICAL: V sb.: Sostav i svoystva vysokomolekul. chasti nefti, Moscow,
            AS USSR, 1958, pp 364 - 367

ABSTRACT: A diagram is proposed of the process of continuous adsorption
            of S-compounds from raw material to be processed which is
            diluted with gasoline. At the ratio adsorbent : percolate =
            = 1.7 : 1 diesel fuel is obtained with a minimum S content of
            0.2%.
                                                      M. Rudenko

Card 1/1

GUREVICH, I.L.; SAHDANASHVILI, A.G.; KISELEV, B.D.

Removal of aromatic hydrocarbons from soft paraffins. Trudy
MINKHiGP no.28:116-125 '60.   (MIRA 14:4)
          (Paraffins)   (Hydrocarbons)

S/081/62/000/011/037/057
E075/E136

AUTHOR: Gurevich, I.L.

TITLE: New fuel variant for the refining of sulphurous crudes

PERIODICAL: Referativnyy zhurnal, Khimiya, no.11, 1962, 516,
            abstract 11 M174. (Novosti neft. i gaz. tekhn.
            Neftepererabotka i neftekhimiya, no.3, 1961, 3-6).

TEXT: An essentially new scheme for the refining of
sulphurous crudes is proposed by the Moskovskiy institut neftekh-
imicheskoy i gazovoy prom-sti (Moscow Institute of the Petro-
chemical and Gas Industry), based on the adsorption and extraction
processes. After a long study under laboratory conditions and
pilot plants, four variants for the adsorptional removal of organic
sulphur compounds from petroleum and its fractions were proposed:
1) adsorptional desulphurization of crude oils; 2) adsorptional
desulphurization of separate distillates; 3) adsorptional
desulphurization of a wide fraction (up to 350 °C);
4) adsorptional desulphurization of a wide fraction (up to 500 °C).
In the refinery schemes the application of adsorptional refining
will permit drastic lowering of the sulphur content in the

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New fuel variant for the refining...   S/081/62/000/011/037/057
                                          E075/E136

fractions and exclude the hydrofining.

[Abstractor's note: Complete translation.]

Card 2/2

s/081/62/000/004/067/087
B150/B138

AUTHOR: Gurovich, I. L.

TITLE: Desulfurizing a diesel fuel fraction by diethylene glycol

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 478, abstract
            4M141 (Novosti neft. i gaz. tekhn. Neftepererabotka i nefte-
            khimiya, no. 4, 1961, 15-16)

TEXT: Laboratory investigations of the extraction of S-organic compounds
from kerosine and gas oil fractions by counterflow extraction with diethy-
lene glycol (I) established that I is an effective solvent of the aromatic
and S-organic compounds. The depth of dearomatization and desulfurization
of the diesel fuel fraction depends, in particular, on the ratio of I to
the crude and on the extraction temperature: with an increase of the
repetition factor of I, and also in the extraction temperature, the degree
of extraction of the SE compounds increases. With an appropriate routine
procedure for extraction of the S-organic substances from the kerosine
and gas oil fractions of the sulfurous petroleums, it is possible to

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Desulfurizing a diesel fuel...

S/081/62/000/004/067/087
B150/B138

produce diesel fuels with a minimum ($<$ 0.2%) content of S. The commer-
cialization of the process is not complicated and the operational costs
are not large. [Abstracter's note: Complete translation.]

Card 2/2

Z/011/61/018/012/004/007
E073/E535

AUTHORS: Gurevich, I.L. and Zhake, L.Yu.

TITLE: Triethyleneglycol as a selective solvent of aromatic
             hydrocarbons

PERIODICAL: Chemie a chemická technologie; Přehled technické a
             hospodářské literatury, v.18, no.12, 1961, 560,
             abstract Ch61-7748 (Khimiya i tekhnologiya topliv i
             masel, no.5, 1961, 11-14)

TEXT: The advantages are proved of triethyleneglycol as
compared to diethyleneglycol as a solvent for extracting aromatic
solvents and the efficiency of multi-stage extraction during de-
aromatisation.   Graphical methods applied for determining the
number of extraction steps were verified; these can be used in
practice for obtaining fractions with the desired properties.
4 figures, 2 tables, 12 references.

[Abstractor's note: Complete translation.]

Card 1/1

33444
S/065/62/000/002/001/004
E075/E485

//.9/00

AUTHORS: Gurevich, I.L., Zhake, L.Yu.

TITLE: Isolation of pure aromatic hydrocarbons

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.2, 1962, 7-12

TEXT: Laboratory experiments have been carried out to study isolation of aromatic hydrocarbons in high degree of purity by means of extraction with triethyleneglycol containing 10% water. It was established previously that the addition of water increases the selectivity of the glycol and leads to an increased concentration of aromatics in the extract.   A mixture of 36.5% benzene and 63.5% n-heptane was used in all the experiments. Benzene was isolated by a multistep countercurrent extraction with recirculation carried out in separating funnels according to a scheme shown in Fig.3.   Separating funnels corresponding to various stages of extraction for the raffinate part of the scheme are represented by squares marked by Arabic numerals and for the extract part by Roman numerals.   In the first period solvent T is introduced into stage 2 where it meets solution C. Raffinate P_2 obtained after mixing and standing is transferred to stage 1 and extract $Э_2$ transferred to stage I of the extraction
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S/065/62/000/002/001/004
E075/E485

Isolation of pure aromatic ...

section of the column.   In the first period raffinate P_2 is
de-aromatized with another quantity of solvent I in stage 1 and is
then removed from the system.   This procedure is continued until
the fifth period of extraction is reached whereupon the composition
of the products is stabilized.   The temperature of extraction was
20°C and the ratio of solvent solution 3:1.   To increase the
concentration of aromatic hydrocarbons in the extract, an
extraction column is used fitted with an entracting section and a
system for the introduction of recirculating aromatic hydrocarbons.
In the scheme in Fig.3 this is represented by squares I and II and
arrow R.   To obtain an extract containing high purity aromatic
hydrocarbons, the concentration of the latter in the recirculating
current was 99.6% and the fraction of recirculating liquid was
0.38 of the solution.   This process with one stage gave an extract
containing 99.3% benzene in 77.9% yield and raffinate containing
93.2% benzene in 22.1% yield.   Extraction with two stages in the
extracting section gave an extract containing 99.5% benzene with
95.5% yield and raffinate containing 63.7% benzene in 4.6% yield.
Calculation of the necessary quantities of recirculating liquid

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Isolation of pure aromatic ...

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S/065/62/000/002/001/004
E075/E485

and number of stages of extraction for obtaining products of required quality was carried out by drawing triangular diagrams of the type described in Ref.8 (Alders L. Liquid-liquid extraction, 1955, in Russian translation IL, 1957) and Ref.9 (Perry. Chemical Engineers Handbook, 1950). There are 4 figures and 9 references: 1 Soviet-bloc, 1 Russian translation from non-Soviet-bloc publication and 7 non-Soviet-bloc. The four most recent references to English language publications read as follows:
Ref.2: Petroleum, XX, no.10, 1957, 374;
Ref.3: Petroleum Refiner, May, v.97, 1952;
Ref.4: Oil and Gas. May, v.55, no.21, 1957, 180;
Ref.5: Petroleum Refiner, no.11, 1957, 304.

ASSOCIATIONS: MINKh
            GP im. I.M.Gubkina

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